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TO: Keith Creagh, Deputy Director, Department of Agriculture  
Jean Chabut, Chief Administrative Officer, Public Health Administration,  
Department of Community Health  
Division Chiefs, Department of Environmental Quality

FROM: Jim Sygo, Deputy Director

DATE: January 11, 2006

SUBJECT: Fifth Annual Report of Progress on Children's Health Issues

Attached is a copy of the "Fifth Annual Report of Progress on Children's Health Issues" by the Department of Environmental Quality (DEQ) Toxics Steering Group (TSG). This report provides the TSG's continuing actions to implement the recommendations contained in the February 2000 Michigan Environmental Science Board report entitled, "Analysis of the Michigan Department of Environmental Quality's Administered Environmental Standards to Protect Children's Health." This report fulfills the requirement for the TSG to make an annual report of findings and recommendations of actions to be taken by the DEQ to ensure adequate protection of children's health found in the DEQ Policy and Procedure Number 09-006.

The report will be available on the TSG Web site.

Attachment

cc: TSG Members  
cc/att: Mitch Irwin, Director, Department of Agriculture  
Janet Olszewski, Director, Department of Community Health  
Steven E. Chester, Director, DEQ  
Stanley F. Pruss, Deputy Director, DEQ





**FIFTH ANNUAL REPORT OF PROGRESS ON CHILDREN'S HEALTH ISSUES  
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
TOXICS STEERING GROUP**

January 11, 2006

**I. Introduction**

This fifth annual report presents the findings and recommendations of the Michigan Department of Environmental Quality (MDEQ), Toxics Steering Group (TSG) for ensuring adequate protection of children's health. Specifically, this report documents the TSG's progress over the last year in implementing the recommendations from the Michigan Environmental Science Board (MESB) report entitled, *Analysis of the Michigan Department of Environmental Quality's Administered Environmental Standards to Protect Children's Health*, and directives from the March 17, 2000, memo from former MDEQ Director Russell Harding supporting those recommendations. Progress is also reported on additional recommendations and priorities identified in the previous annual reports.

**II. Summary of the MESB Children's Standards Investigation Panel Recommendations and Corresponding TSG Actions and Recommendations for Implementation**

The MESB Children's Standards Investigation Panel (MESB Panel) recommendations are summarized below. Specific TSG actions taken in response to these and to recommendations from previous annual reports are provided below each MESB Panel recommendation.

- A. The MESB Panel recommended that the MDEQ TSG's interactions with toxicological, epidemiological, and risk assessment staff in other state departments be increased.

RESPONSE: The TSG recommended that efforts to increase the MDEQ's interactions with other state agencies continue. The TSG continues to operate with membership from the Michigan Department of Agriculture (MDA) represented by Dr. Brian Hughes of the Pesticide and Plant Pest Management Division, and the Michigan Department of Community Health (MDCH) represented by Dr. Linda Dykema, Christina Bush, Erik Janus, and Kory Groetsch of the Environmental and Occupational Epidemiology Division.

The TSG continues to meet on a regular basis. TSG members from other state agencies participate on several subcommittees and efforts to coordinate with other agencies will continue to be pursued when opportunities arise. The MDA and MDCH have designated representatives on the TSG's Children's Environmental Health Subcommittee (CEHS).

- B. The MESB Panel recommended that the MDEQ continue to incorporate the best available science in the development and review of its environmental standards, and identified specific areas in which to focus initial efforts. The MESB Panel made two specific recommendations concerning the MDEQ soil direct contact criteria (chemical criteria protective of incidental ingestion of and dermal contact with soil), developed under the authority of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. First, the MESB Panel recommended that occasional high intakes of soil, rather than average daily chronic

intakes, be considered in the development of these criteria in some cases. Second, the MESB Panel recommended that the MDEQ consider exposure to the same substances through other exposure routes, such as water and food in the development of soil direct contact criteria.

RESPONSE: The TSG recommended that the MDEQ identify those compounds for which an occasional high intake of soil may pose an acute health risk and develop direct contact criteria protective of this exposure scenario. This was identified as a low priority recommendation. Although it has been discussed and a process drafted for identification of acutely toxic hazardous substances, no work has been completed to date. This issue will be evaluated as criteria are revised or new criteria are developed. A reevaluation of the current criteria will be done only as time and resources allow; however, since the criteria are promulgated in the Part 201 Rules, revisions to promulgated criteria will be difficult and adoption of the revisions will likely take years.

In addition, the TSG recommended that algorithms for the calculation of direct contact criteria be developed for a child-only receptor and that these algorithms be considered for use in developing criteria for land uses where children may be expected to be present (e.g., the residential exposure scenario). This has also been identified as a low priority recommendation. Child-only direct contact criteria have been drafted by the MDEQ's Remediation and Redevelopment Division (RRD); however, because it is a low priority recommendation and because the criteria are in the Part 201 Rules, no further work on these criteria has been pursued.

Further, the TSG recommended that a relative source contribution factor less than one (i.e., less than 100 percent) be used to develop soil direct contact criteria where chemical-specific information is available. This option is currently available under the existing Part 201 Rules; however, an update of the scientific literature has not been conducted to determine if more chemical-specific relative source contribution factors can be developed. It is currently identified as a low priority recommendation and will likely be addressed only for some chemicals as criteria are revised or new criteria are developed. Again, since the criteria are promulgated in the Part 201 Rules, revisions to the criteria will be difficult and time consuming.

- C. The MESB Panel recommended that it be a high priority for the MDEQ to collect high quality hazardous air pollutant data and conduct a risk assessment. They also noted that the recommended risk assessment should be used to prioritize the hazardous air pollutants based on estimated relative risk and the contribution that air exposures make to overall risk from the hazardous air pollutants. The MESB Panel recommended a periodic update of screening levels and that "total risk" be assessed.

RESPONSE: The MDEQ's Air Quality Division (AQD) completed the development of an air toxics monitoring strategy to address the need for high quality data on toxic air contaminants. The details of this strategy are provided in the June 27, 2002 report entitled, "The Development of an Air Toxics Monitoring Strategy for Michigan." While funding is not currently available to implement this strategy, it will be used as a guide to help implement an expanded air toxics monitoring program should future funding become available. The AQD continues to seek funding to improve its air toxics monitoring network, and has received some limited funding from the U.S. Environmental Protection Agency (EPA) for additional monitoring over the last few years.

During April 2001 to April 2002, the AQD conducted an intensive air toxics monitoring program in the Detroit area through a grant funded by the EPA. The data from this monitoring study have been used to conduct a risk assessment for air toxics in the Detroit area as part of a project called the "Detroit Air Toxics Initiative" (DATI). A report providing the details of the DATI risk assessment was completed in November 2005. The report is available at the AQD Web site. The findings from this study identified 15 pollutants that contributed the most to the health risks from air toxics in the Detroit area.

The results from the DATI combined with data compiled through various EPA efforts, such as the National Air Toxics Assessment, can be used to help prioritize screening level updates. However, a comprehensive strategy is needed for a routine update of all screening levels, not just for those compounds for which monitoring data are available.

To further implement the MESB Panel's recommendation, the TSG recommended that a procedure be developed for a routine update of all screening levels considering all new and relevant information. This was identified as a high priority recommendation. No activity has taken place on this recommendation due to staffing limitations and other program priorities.

- D. The MESB Panel recommended that the MDEQ continue to monitor the EPA's efforts to assess drinking water and surface water standards for protection of children's health and consider application of new EPA approaches to Michigan standards as they are validated.

RESPONSE: The TSG recommended that the MDEQ continue to track new and revised federal drinking water and surface water standards and incorporate these as appropriate. This was identified as a high priority recommendation. Several MDEQ divisions routinely monitor federal and state drinking water and federal surface water standards and incorporate new or revised standards into Michigan programs as appropriate. Consistency across divisions and programs is a primary objective when incorporating new or revised standards so that all MDEQ programs that rely on a set of standards or criteria are using the same values. Activities to implement the MESB Panel's recommendation include the following:

- The MDEQ's Water Bureau (WB) currently tracks all changes in federal surface water quality and drinking water standards, and incorporates these changes into rules when appropriate. The WB is in the process of incorporating the maximum contaminant level for arsenic into state rules.
- The RRD currently monitors the promulgation of both federal and state drinking water standards. Section 20(a)(5) of Part 201 states that if a state drinking water standard exists for a hazardous substance, the drinking water criterion (DWC) is the more restrictive of that state standard and the aesthetic criterion if one is available. It generally takes a minimum of one year for a federal drinking water standard to be promulgated as a state standard. Therefore, because Part 201 specifically refers to a "state standard," a Part 201 DWC may not be consistent with the federal safe drinking water act. A new state drinking water standard for arsenic was promulgated on April 6, 2005. The Part 201 DWC based on this state standard became effective on October 31, 2005. A Part 201 DWC for bromate also became effective on

October 31, 2005. This DWC is based on the state drinking water standard for bromate that was promulgated on January 29, 2003.

The TSG also recommended that the MDEQ monitor the EPA's efforts to revise methods for calculation of drinking water and surface water standards for protection of children's health and incorporate these revised methods as appropriate. This was identified as a high priority recommendation. The RRD and the WB routinely monitor information from the relevant EPA offices in the area of children's health issues. Other sources that would provide information regarding children's health and risk assessment methods are also monitored on a routine basis.

- E. The MESB Panel recommended that the MDEQ risk assessors maintain their scientific strengths by taking advantage of education opportunities offered through various scientific societies, symposia, and the federal government. Such efforts would allow the scientific staff at the MDEQ to continue to appropriately use the most current risk assessment techniques.

RESPONSE: The TSG supported this recommendation. Staff have attended various events (see Section G. 5).

- F. The MESB Panel recommended that the MDEQ incorporate the concepts of mixtures and cumulative risk into its regulatory risk assessment process as the science matures.

RESPONSE: The TSG formed the Mixtures and Cumulative Risk Subcommittee.

Mixtures and Cumulative Risk Subcommittee

Chair: Bob Sills, AQD

This subcommittee is charged with evaluating the available approaches for performing toxicological risk assessment for exposures to mixtures of substances, as well as cumulative exposure and risks. The subcommittee will consider how and if these approaches may be appropriately applied in the MDEQ regulatory programs. This is an extremely broad and challenging subject to address, with potentially wide ramifications to all of the MDEQ's regulatory risk assessment programs. Guidance and examples from the EPA and other agencies are reviewed as they become available. Issues are being addressed on a case-by-case basis.

- G. The MESB Panel recommended that the MDEQ continue to keep abreast of the new information emanating from the federal government, academia, and scientific literature regarding the impact of environmental contaminants on children's health.

RESPONSE: The TSG formed the Children's Environmental Health Subcommittee.

Children's Environmental Health Subcommittee

Chair: Mary Lee Hultin, AQD

This subcommittee is charged with tracking developments in the area of children's environmental health and making recommendations to the TSG for incorporation into human health risk assessment procedures, as appropriate. The subcommittee chair

regularly updates the TSG on current activities of the CEHS. The objectives of this subcommittee and associated actions since the last annual report include the following:

1. Track the latest scientific findings in the area of children's environmental health: The subcommittee continues actively tracking the latest scientific findings in this area. The MDEQ librarian monitors new literature for publications in this area. All members of this subcommittee monitor the literature via periodical reviews and the Internet. A database has been developed listing reports and studies reviewed and critiqued by the group. The current contents of this database are included as Appendix A.
2. Efforts continue to identify activities in other states in the area of children's environmental health. The group has been tracking developments of groundwater rule revision in Minnesota. The Minnesota Health Department (MDH) has proposed alterations in the exposure assumptions for their health risk limits (HRLs) in order to account for differential water intake by children. They have also proposed a cancer risk adjustment to account for different susceptibility in children. The CEHS members reviewed the proposals. A stakeholder's group is being formed in Minnesota to review and comment on their proposal. Members of CEHS have also followed children's health activities under California's Air Toxics Program. California is doing a great deal of outreach to schools regarding children's environmental health. They have a bill in their legislature providing guidance on the siting of schools near sources of contaminants.
3. Members continue to track activities at the federal level as time and resources allow via the *Federal Register* and other national and local publications.
4. Members are charged with tracking results of the individual research findings pertinent to their divisions/department areas of responsibility. A number of CEHS toxicologists have been participants in the following grant-funded research activities related to children's environmental health.

Two members of the CEHS, in collaboration with staff from the MDCH, University of Michigan, and Michigan State University (MSU) continued working on a Centers for Disease Control (CDC)-funded project examining potential associations of criteria air pollutants in two Michigan counties with adverse birth outcomes. A poster from this work was presented at the International Society for Environmental Epidemiology in South Africa in August 2005.

A member of the TSG proposed an investigation of illness at a Lake Michigan beach that met the criteria for an EPA-conducted epidemiology study. The Office of Research and Development of EPA subsequently conducted epidemiology studies at four beaches including this Lake Michigan beach. Results of the studies showed that the incidence of gastrointestinal illness in children aged ten years and younger correlated to enterococci in surface water better than any other age group. These results were generated using the new rapid method for measuring enterococci in surface water. Results also showed that children swallow more water, spend more time in the water, and have diarrhea more often than other age groups.

The MDCH toxicologist is working with the MDEQ's RRD on former lead smelter sites in the Detroit area. The health agency will be writing health consultations for at least two sites. The public-comment consultations should be available in late 2005. They will be posted on the MDCH Web site.

5. Activities of the MDA in the area of children's environmental health are reported by the MDA toxicologist. The MDA continues to track changes in pesticide registrations. The majority of these changes result from the Food Quality Protection Act (FQPA) of 1996 and the subsequent reassessment of pesticide tolerances. These pesticide tolerances are based on aggregate and cumulative risk assessments considering both adults and children. The aggregate assessment takes into account pesticide exposure through application to the food supply, residential uses, or contaminated drinking water. The act also includes an additional 10X safety factor to protect children.

The most notable change has been the phase-out of all indoor and outdoor residential uses of the organophosphate diazinon to reduce risk to children and others. All indoor residential use product registrations were cancelled and retail sale of these products ended as of December 31, 2002. All outdoor residential use product registrations must be canceled and retail sale ended December 31, 2004. MDA inspection staff were responsible for ensuring that retailers were notified of these provisions and for issuance of stop sale orders to any establishment found selling these products after the December deadline.

Some other MDA activities that were also left out of the prior report include:

The MDA, through its Pesticide Advisory Committee, heard a petition to ban the sale and use of lindane. Lindane is an organochlorine pesticide used by doctors to control head lice and scabies in humans. The petition was provoked because of the reported number of adverse health events in children using lindane. Lindane is available only through a doctor's prescription and dispensed in amounts for one application.

Agriculturally, lindane is a pre-plant seed treatment for barley, corn, oats, rye, sorghum, and wheat. EPA completed a reregistration eligibility decision on these uses as of September 2002. EPA concluded that the agricultural use of lindane was within acceptable occupational risks if increased mitigation measures, such as decreasing the application rate and the increase of personal protective equipment, were implemented. MDA denied the petition for the following reasons:

The vast majority of health and environmental risks of lindane come not from legal agricultural use, but from medical doctors prescribing lindane as a treatment on humans for lice and scabies. MDA has no regulatory authority over prescription uses of lindane.

The EPA's recent occupational risk assessment regards the current use of lindane to be within acceptable risk limits.



The exposure pathway is incomplete regarding lindane's agricultural use to the population of interest, children.

Therefore, the issue of banning prescription uses of lindane was remanded to the MDCH.

6. The CEHS member participated in a number of conferences/workshops on issues related to children's environmental health and risk assessment. The members brought information back to the TSG and subcommittees to expand our knowledge base. Participation in the following events allowed for information sharing between other states in the area of children's environmental health:
  - a. The CEHS members participated via teleconference in the Fall 2005 Federal-State Toxicology and Risk Analysis Committee (FSTRAC) meeting with presentations on the following EPA updates for the following initiatives:
    - i) Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants.
    - ii) Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens National Children's Study.
    - iii) The FSTRAC meeting also provided updated information on state children's environmental health initiatives in New York, California, and Minnesota.
    - iv) Child-Specific Exposure Factors Handbook .
  - b. A number of TSG members attended a seminar given by Dr. Mike Dourson of the Toxicology Excellence for Risk Assessment (TERA) titled, "Past and future use of default assumptions and uncertainty factors."
  - c. The chair of the CEHS attended a webcast from Dr. Beate Ritz, University of California – Los Angeles (UCLA), titled, "Air Pollution and Adverse Pregnancy Outcomes in the South coast Air Basin of California."
  - d. Bioavailability of Lead and Arsenic – Some TSG members attended this California EPA seminar via Web cast.
  - e. The chair of the CEHS attended a Peer Review Panel meeting titled "Draft Framework to Evaluate whether the Default Uncertainty Factor for Human Kinetic Variability is Adequate for Protecting Children," held in Cincinnati in March. The meeting was sponsored by TERA via grant funding from the EPA. The purpose of the TERA-sponsored peer consultation was to analyze the draft framework noted above. Several scientists, widely recognized for the work in the area of children's environmental health, were on the panel. The panelists debated the draft and provided comments for TERA. The framework presented was at an early draft stage. TERA is due to update the framework based on comments received at the workshop, but this has not yet been published on the Web site. The framework will then be given to EPA for further action.

- f. The 44th Annual Meeting of the Society of Toxicology was held in New Orleans, Louisiana from March 6-10, 2005. A TSG member was in attendance at the following workshops/seminars/poster sessions specifically related to Children's Health:

- Brominated Flame Retardants: New Findings
- Children's Health and Juvenile Animal Toxicology
- Current Regulatory and Scientific Views Regarding Chemical Hazards to Children
- Developmental Neurotoxicity
- Developmental Toxicology
- Dosimetry and Potential Impacts on Reproductive/Developmental Study Design and Interpretation for Risk or Safety Assessment
- Endocrine Disruptors
- Environmental Factors Affecting Breast Cancer Susceptibility
- Female Reproductive Toxicology
- Male Reproductive Toxicology

Along with providing important technical knowledge, these sessions supplied "take-home" messages concerning the future of risk assessment with regard to children's health. There seems to be some agreement among the toxicology community that the use of an additional uncertainty factor (UF) under the Food Quality Protection Act is not necessary as it overlaps the database gap UF. It was reported that 67-100% of the population is protected by the inclusion of a database UF; those that are not protected typically have an underlying disease.

More credence is being given to the hypothesis that prenatal and early-life exposures may have effects that are not visible until adulthood. It is expected that physiologically-based pharmacokinetic and/or computational toxicology models will eventually replace animal research as the basis of chemical-specific and mixture risk assessments. The gestational and lactational exposure periods are poorly characterized, and the National Children's Environmental Exposure Research Study was designed to generate data that would produce more accurate models. For several reasons, however, that study was cancelled in April with no indication of a restart date.

Since 1973, levels of brominated flame retardants in humans (serum, breast milk) have increased 100-fold. These compounds may be developmental neurotoxicants; their significance was compared to that of polychlorinated biphenyls and dioxins/furans. Additional substance-specific discussion focused on the facts that neonates comprise the group that is most highly exposed to phthalates, and that only 2.2% of children today have blood lead levels greater than 10 micrograms/deciliter.

- g. Dr. Jack Zabik from Dow Agrosiences spoke to the TSG regarding the Cumulative and Aggregate Risk Evaluation System (CARES). The purpose of this visit was to further explain the risk assessment procedures EPA instituted to conduct the aggregated and cumulative risk assessments required under FQPA, CARES is an industry sponsored risk assessment software package

that allows for the simultaneous evaluation of various exposure pathways among several referent populations. The CARES system is currently being maintained by the International Life Sciences Institute. Dr. Zabik mentioned that the utility of this system could be expanded to other agencies to perform other types of risk assessments (e.g., hazardous waste sites). Although Dr. Zabik's presentation occurred in 2004, this information was inadvertently left out of the previous report.

- h. Detective Lieutenant Tony Saucedo provided a presentation to the full TSG about clinical, criminal, and environmental concerns associated with clandestine methamphetamine labs.
7. Members of the CEHS participate with other subcommittees of the TSG to ensure that issues pertaining to children's environmental health are comprehensively addressed. Members of the CEHS serve on the Cancer Risk Assessment, Uncertainty Factors (UFs), Dioxin, Trichloroethylene (TCE), Probabilistic Risk Assessment (PRA), Lead, and Polybrominated Diphenyl Ether (PBDE) subcommittees.

### III. Summary of Other TSG Subcommittee Activities

The following TSG subcommittees are charged with incorporating best available science into the development and review of environmental standards:

- Cancer Risk Assessment Subcommittee  
Chair: Cathy Simon, AQD

No activity occurred in this subcommittee during the past year. In March 2005, the EPA released its final "Guidelines for Carcinogen Risk Assessment" and "Supplemental Guidance from Assessing Susceptibility from Early-Life Exposure to Carcinogens." The guidelines lack specificity in many critical areas. The subcommittee is waiting for EPA use and implementation of the guidance provided in these documents to enable assessment of use and impacts for MDEQ programs.

- UFs in Non-Cancer Risk Assessment Subcommittee  
Chair: Bob Sills, AQD

This subcommittee is charged with determining if a UF for database insufficiency should be considered and applied, if appropriate, by MDEQ toxicologists when deriving non-cancer toxicity values, such as oral reference doses (RfDs) and inhalation reference concentrations (RfCs). This database UF ( $UF_d$ ) is designed to account for the potential of deriving an under-protective RfD/RfC as a result of an incomplete characterization of a hazardous substance's toxicity. For example, traditional toxicity studies for specific chemicals or groups of chemicals often do not adequately evaluate reproductive, developmental, neurological, and immune system effects. These types of effects are those for which children, infants, and fetuses may be more susceptible and may occur at lower doses than the effects evaluated in traditional studies. If such data gaps exist, the  $UF_d$  (a value between 1 and 10) may be considered to address uncertainty in a calculated chronic RfD/RfC. The EPA frequently applies an  $UF_d$  when deriving RfDs and RfCs for chemicals

determined to have inadequate information to characterize the risk for these effects. Current MDEQ practice for applying UFs in deriving *de novo* RfDs and RfCs does not include consideration of an UF<sub>d</sub>.

Other UFs, generally a value between 1 and 10, used by MDEQ toxicologists, are intended to account for (a) the variation in sensitivity among the members of the human population; i.e., interindividual variability; (b) the uncertainty in extrapolating animal data to humans; i.e., interspecies uncertainty; (c) the uncertainty in extrapolating from data obtained in a study with less-than-lifetime exposure to lifetime exposure; i.e., extrapolating from subchronic to chronic exposure; and (d) the uncertainty in extrapolating from a lowest-observed-adverse effect level rather than from a no-observed-adverse effect level.

The subcommittee has completed a literature review. Over 70 scientific publications were reviewed. The subcommittee is currently drafting a report of its recommendations to the TSG.

- Dioxin Review Subcommittee

Chair: Deb Mackenzie-Taylor, Waste and Hazardous Materials Division (WHMD)

Subcommittee members have been reviewing submittals related to bioavailability studies conducted by The Dow Chemical Company (Dow) in conjunction with independent scientific advisory panel reviews coordinated by TERA. Subcommittee members have also been participating in an ongoing workgroup to identify exposure pathways and other human health risk assessment issues related to Dow's offsite corrective action. This workgroup has met frequently since June 2005.

- TCE Toxicity Assessment Review Subcommittee (TTARS)

Chair: Amy Merricle, RRD

The formation of the TTARS was necessary to address public comments received during the public comment period prior to promulgation of the Part 201 Administrative Rules regarding the proposed cleanup criteria for trichloroethylene (TCE). The objective of the subcommittee was to conduct an expedited review of an external review draft document published by the EPA (2001), entitled "Trichloroethylene Health Risk Assessment: Synthesis and Characterization (EPA HRA)," to determine if the oral and inhalation toxicity values that were used to develop the Part 201 generic cleanup criteria should be updated prior to promulgation in the Part 201 Administrative Rules. The toxicity values recommended in the EPA HRA suggested considerably greater potency of TCE than what was (and is currently) reflected in the toxicity value (slope factor) used for calculation of the Part 201 generic cleanup criteria. Criteria based on the EPA's proposed toxicity values would have resulted in more stringent (i.e., lower) generic criteria than currently promulgated in the Part 201 Administrative Rules.

The EPA's proposed toxicity values were not supported by the subcommittee. It was determined that a recommendation to adopt the EPA's proposed toxicity values from the draft EPA HRA was premature. The Part 201 Rules were promulgated in December 2002. EPA has yet to complete their assessment of TCE.

The TTARS continues to monitor the progress of the EPA's Science Advisory Board's review of the draft EPA HRA on TCE. There was no subcommittee activity this past year.

- Probabilistic Risk Assessment (PRA) Subcommittee  
Chair: Deb Mackenzie-Taylor, WHMD

In March 2005, the subcommittee members attended a workshop for PRA. It was held at Michigan State University and sponsored by the Society for Risk Analysis.

- Lead Subcommittee  
Chair -Christine Flaga, RRD

Rochelle Inglis had been the previous chairperson of this subcommittee. Rochelle resigned from the MDEQ in February 2005. This subcommittee has been relatively inactive this past year.

- Polybrominated diphenyl ethers (PBDE) Subcommittee  
Chair: Christine Flaga, RRD

The PBDE subcommittee was created in 2003, in response to a request made by MDEQ management for recommendations regarding proposed legislation to ban PBDEs in Michigan. In January 2004, this subcommittee drafted a report that summarized all of the pertinent information available on PBDEs. The subcommittee sent the draft report to interested parties for comment and met with stakeholders to discuss the initial findings of the report. The subcommittee invested some time during fiscal year (FY) 2005 to revise and finalize the report however, staffing resources have prevented the subcommittee from meeting their goal. Revision and finalization of the report will continue during FY 2006.

- Clandestine Drug Lab Remediation Subcommittee  
Chair: Christine Flaga

The TSG created this new subcommittee in 2004, in response to a new state law 2003 PA 307, as amended (effective April 1, 2004), that requires the MDEQ and the enforcing agency (i.e., local building inspector) be notified by the state or local law enforcement agency regarding potential contamination of properties or dwellings that have been used for illegal drug manufacturing. The MDEQ is required to promulgate the rules and procedures necessary to carry out this new legislation. First and foremost, this includes writing a remediation standard for residual methamphetamine present in dwellings used as a clandestine lab.

One of the members of the subcommittee from RRD resigned from the MDEQ in June 2005. Due to staffing issues, the subcommittee as a whole was relatively inactive over the last year. Erik Janus from MDCH continued to provide support as requests were submitted to his department; however, this work was separate from the subcommittee. MDCH is currently in the process of filling a position. The person hired for this position will primarily be responsible for supporting the meth lab issue. This subcommittee is suspended until the MDCH toxicology position has been filled and the legislative issues have been resolved. An update will be provided at the next TSG meeting.

**IV. Summary of TSG Actions in Response to the Directives Contained in the March 17, 2000 Memo from Director Harding**

Former MDEQ Director Harding indicated that TSG should seek outside expertise from both industry and environmental health organizations as needed for specific issues. As an initial step to comply with this directive, a memo from the prior MDEQ administration was mailed to a list of industrial associations, academic institutions, and environmental organizations. The memo requested assistance in identifying a pool of scientific experts in the areas of children's health, risk assessment, and toxicology from which the TSG could request outside expert advice. The response to this request was minimal. One response was received from a university identifying one individual. Another response was received from a company that identified an individual to serve as a liaison between this company and the TSG. No other responses have been received to date.

Since the initial effort to identify a pool of outside experts did not produce a significant response, the TSG recommended that efforts be made to identify qualified outside experts as specific issues arise.

**V. Recommendations from Previous Reports**

A review of the TSG recommendations from previous reports indicate all are still applicable. Efforts should continue to implement these recommendations as program priorities, staff time, and resources allow. A specific recommendation made by the TSG in the third annual report was for members to take advantage of education and outreach opportunities. In addition to the TSG Web site, activities identified this year with respect to this recommendation are as follows:

- A CEHS member continues to work on projects in collaboration with the MDCH on environmental triggers of asthma as part of the statewide asthma strategic plan. One of these projects included a "Train the Trainer" conference on Triggers of Asthma was conducted for Local Health Professionals held in August. Much of this information on triggers is of specific concern for children. A grant proposal was prepared and submitted to EPA's Office of Children's Health Protection in an attempt to expand this training. However, the proposal was not funded.
- The CEHS chair prepared a report, in collaboration with researchers and regulators from the United States and Canada, summarizing studies on air pollution, including those focusing on children's environmental health, being planned and conducted in Canada and the United States as part of the United States/Canada border air quality study, Detroit/Windsor pilot project. Projects of interest to the CEHS by Health Canada include a Windsor Children's Respiratory Health study and a Pregnant Women and Birth Outcomes study. The report is available at [www.ec.gc.ca/cleanair-airpur/caol/canus/great\\_lakes/index\\_e.cfm](http://www.ec.gc.ca/cleanair-airpur/caol/canus/great_lakes/index_e.cfm)
- The MDCH toxicologist, in response to requests from a pediatrician's office and concerned parents, developed fact sheets titled, "Evaluating Aluminum Exposure," for healthcare providers and the public. Several parents, concerned that their elementary school-aged children were being exposed to airborne aluminum particulates emitted from a local aluminum recycling smelter, independently chose to have their children's blood aluminum tested. When the results came back higher than the laboratory's

reference range, the parents and their pediatrician contacted MDCH for assistance in interpreting the results. MDCH conferred with the Agency for Toxic Substances and Disease Registry (ATSDR) regional office in Chicago, the ATSDR Division of Toxicology in Atlanta, the regional Pediatric Environmental Health Specialty Unit at Chicago's Cook Hospital, and the Poison Control Center out of the Detroit Medical Center. The workgroup produced fact sheets, which have been posted on the MDCH Web site at [www.michigan.gov/mdch-toxics](http://www.michigan.gov/mdch-toxics), under "Health Assessments and Related Documents," then under "Continental Aluminum."

- Similarly, at another site, concerned parents felt that ash from a utility burning tire-derived fuel, might contain harmful levels of lead and arsenic and that their children should have their blood tested. While blood lead testing has a well-established protocol, the local health care clinic requested guidance for arsenic testing. MDCH toxicologists conferred with the ATSDR regional office and produced a fact sheet on "Evaluating Arsenic Exposure," which has been posted on the MDCH Web site [www.michigan.gov/mdch-toxics](http://www.michigan.gov/mdch-toxics), then under "Health Assessments and Related Documents," under "Hillman Power Company."
- MDA was asked to participate in the Michigan Public Health Training Center's seminar series for 2004 entitled, "Addressing Environmental Contaminants and Their Effects on Human Health." The course offered lectures on the environmental and health problems of those exposed to pesticides as well as lead, mold, and mercury. Dr. Brian J. Hughes, Toxicologist, MDA, presented information on the signs and symptoms of various pesticide poisoning, the magnitude of the problem in Michigan, sensitive subpopulations with emphasis on childhood exposures, reporting requirements, identifying pesticide poisonings, and principles of Integrated Pest Management. The course participants also received the EPA manual entitled, "Recognition and Management of Pesticide Poisonings." The courses were offered in Grand Rapids, Detroit, and Saginaw. Participating were 103 professionals from Government (59), Health Systems and Health Plans (9), Local Community Groups (17), and private/non-profit organizations (18). The majority of the participants were from local health departments.

Staff from the CEHS assisted with the combined Earth Day/Bring Your Child to Work Day event with booths on air quality and asthma and Clean School Bus USA. Staff from AQD and ESSD continue to provide assistance to school districts seeking to implement school bus diesel reduction initiatives.

## VI. Summary

The following progress has been made by the TSG on issues related to children's environmental health in FY 2004 and FY 2005:

- The TSG has continued interactions with other Michigan state agencies including regular participation in the TSG and its subcommittees by representatives of the MDCH and MDA.

- The CEHS has been actively tracking changes made by other states and the federal government to address differences in children's exposure and sensitivity. Many TSG members have attended seminars, symposia, and other training opportunities to stay abreast of risk assessment and children's health issues.
- The TSG is evaluating the appropriateness of an additional UF to account for potential health effects that have not been adequately studied, such as reproductive, developmental, neurological, and immunological effects.
- Review of dioxin and TCE toxicity values is ongoing to make sure that criteria for these chemicals are adequately protective of children's health using the best available science.
- The TSG is tracking changes by the EPA to better address exposure to chemical mixtures and cumulative risk.

Limited progress has been made on the following issues

- Despite the development of an Air Toxics Monitoring Strategy, implementation of the strategy is unlikely due to a lack of funding. While some additional funding has been obtained to supplement the existing air toxics monitoring network, it has been of limited duration and inadequate amount to address existing needs. The DATI has provided important information regarding priority air toxics for the Detroit area during 2001 – 2002; however, better monitoring data is needed to help determine the most critical air toxics for human exposure, prioritize screening level updates, and track progress on efforts to reduce ambient levels of air toxics. Higher priorities and limited staffing resources continue to impede progress on development and implementation of a comprehensive strategy for updating screening levels.
- The TSG and MESB Panel have identified several considerations for the MDEQ cleanup criteria that could be included to use the best available science to better protect for exposures to children and adults. These include:
  1. Direct contact criteria for soil with child-only exposure assumptions. These criteria have been developed but not implemented due to low priority.
  2. Evaluation of acute toxicity for exposure pathways that may have peak exposures. Chronic risk assessment methodologies may not adequately protect for acute toxicity in these situations for some chemicals. Evaluation of the current cleanup criteria for acute toxicity concerns has been given a low priority. This issue will only be addressed as criteria are revised or new criteria are developed.
  3. Consideration of other pathways of chemical exposure for those chemicals that are frequently found in food and other media. This issue has also been given a low priority for evaluating the current criteria and will only be addressed as criteria are revised or new criteria are developed.

Although some of these issues can be addressed as criteria are revised and new criteria are developed, use of more protective criteria when necessary to protect children's health is likely to be further delayed if the criteria cannot be implemented without rule



promulgation. Even with this approach, many chemicals currently with criteria will not be evaluated due to limited staffing resources and prioritization.

- Although the TSG has been tracking changes made to federal drinking water standards, adoption of standards as they are changed is often delayed by two to four years for the cleanup and groundwater permitting programs since the regulation requires state drinking water standards to be used. The state must first promulgate new rules, once a federal standard is final. Frequently, the state of Michigan requires the maximum number of extensions to promulgate new rules adopting new drinking water standards, further delaying implementation of these standards in programs that should protect drinking water supplies for the people of the state of Michigan.
- Application of the best available science to consider chemical mixtures and cumulative risk continues to occur on a case-by-case basis. Limitations of staff time have precluded the pursuit of a broader, systematic approach.

## Appendix A

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